**OG Guide 2021: sai 4 / 42**

Quant PS:

239/ (\*\*) 8 x 10 x 12 🡪 ½ + ½ = 1 cm thick 🡪 7 x 9 x 11 🡪 (7,9) or (9,11) or (7, 11)

* Pi (d / 2)2 h = 7pi/4 9\*9 max 🡪 d/2 = 9/2 = 4.5 cm

259/ (\*) S ABE = ***1/3 S BCDE*** = ¼ S ABCD

Quant DS:

395. A certain computer company produces two different monitors, P and Q. In 2010, what was the net profit from the sale of the two monitors? 🡪 E

1/ Of the company's expenses in 2010, rent and utilities totaled $500,000.

2/ In 2010, the company sold 50,000 units of monitor P at $300 per unit and 30,000 units of monitor Q at $650 per unit.

488 At a certain clothing store, customers who buy 2 shirts pay the regular price for the first shirt and a discounted price for the second shirt. The store makes the same profit from the sale of 2 shirts that it makes from the sale of 1 shirt at the regular price. For a customer who buys 2 shirts, what is the discounted price of the second shirt? 🡪 B

1/ The regular price of each of the 2 shirts the customer buys at the clothing store is $16.

2/ The cost to the clothing store of each of the 2 shirts the customer buys is $12.

P1 + P2 = P1, so P2 = 0 🡪 Determine the value of D (cost of 2nd shirt). (Giá giảm = Chi phí do ko có lời ở áo thứ 2)

**Quant Review 2021: sai 16 / 54**

PS:

108/ |Mon&Tue| + |Tue&Wed| + |Wed&Thu| + |Thu&Fri| / 4

110/ What values of x have a corresponding value of y that satisfies both xy > 0 and xy = x + y ?

xy = x + y 🡪 y = x / (x – 1) 🡪 x != 1

* x2 / (x-1) > 0 🡪 **x > 1**

121/ (x2 – 25)2 = x2 – 10x + 25

(x + 5)2(x – 5)2 = (x – 5)2

(x + 5)2(x – 5)2 – (x – 5)2 = 0

(x – 5)2[(x + 5)2 – 1] = 0

(x – 5)2[(x + 5) – 1][(x + 5) + 1] = 0

(x – 5)2(x + 4)(x + 6) = 0 🡪 4 values

157/ (\*\*) Each of the nine digits 0, 1, 1, 4, 5, 6, 8, 8, and 9 is used once to form 3 three-digit integers. What is the greatest possible sum of the 3 integers?

To create 3 three-digit numbers using each of the digits 0, 1, 1, 4, 5, 6, 8, 8, and 9 and having the maximum possible sum, the greatest three digits must be in hundreds place, the next greatest three in tens place, and the three smallest digits in units place. The sum will then be **(9 + 8 + 8)(100) + (4 + 5 + 6)(10) + (0 + 1 + 1)** = 25(100) + 15(10) + 2 = 2,500 + 150 + 2 = 2,652

204/ 10! – (2)(5!)2 = = (5!)(24)(3)(5)(125) 🡪 1 + 1 + 3 = 5 factors of 5 🡪 55

207/ (\*\*) 9! – 64 = (27 · 34 · 5 · 7) – (24 · 34) = (24 · 34)(23 · 5 · 7 – 1) = (24 · 34)(279) = (24 · 34)(32 · 31) = 24 · 36 · 31, where 31 is prime. Therefore k = 6

208/ (\*\*\*)All of the positive factors of 120 listed in ascending order are 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, and 120. The negative factors of 120 listed in ascending order are –120, –60, –40, –30, –24, –20, –15, –12, –10, –8, –6, –5, –4, –3, –2, and –1. Examining these lists for groups of consecutive factors whose product is 120 gives (1)(2)(3)(4)(5), (2)(3)(4)(5), (4)(5)(6), and (–5)(–4)(–3)(–2)

209/ (\*) 10z + y – (10y + z) = 54. It follows that 9z – 9y = 54 or z – y = 6. Since y and z are digits, the possible values of y and z, respectively, are 0 and 6, 1 and 7, 2 and 8, and 3 and 9 🡪 6

210/ (\*\*) **n(2k) + (n – 1)k = 203, or (3n – 1)k = 203 = (7)(29).** Also, since n and k are positive integers with n ≥ 2, and 203 = is the only factorization of 203 with integer factors greater than or equal to 2, we have two cases.

Case 1: 3n – 1 = 7 and k = 29. In this case we have n = 8/3

Case 2: 3n – 1 = 29 and k = 7. In this case we have **n = 10**.

DS:

214/ Each car at a certain dealership is either blue or white. What is the average (arithmetic mean) sticker price of all the cars at the dealership? 🡪 C

1/ Of all the cars at the dealership, 1/3 are blue and have an average sticker price of $21,000.

2/ Of all the cars at the dealership, 2/3 are white and have an average sticker price of $24,000.

241. A certain company consists of three divisions, A, B, and C. Of the employees in the three divisions, the employees in Division C have the greatest average (arithmetic mean) annual salary. Is the average annual salary of the employees in the three divisions combined less than $55,000 ? **--> B**

1/ The average annual salary of the employees in Divisions A and B combined is $45,000.

2/ **The average annual salary of the employees in Division C is $55,000.**

271/ (\*\*) The table shows the number of people who responded “yes” or “no” or “don't know” when asked whether their city council should implement environmental programs X and Y. If a total of 1,000 people responded to the question about both programs, what was the number of people who did not respond “yes” to implementing either of the two programs?

--> A. 1,000 – (300 + 100 + 200) = 400

1/ The number of people who responded “yes” to implementing only Program X was 300.

2/ The number of people who responded “no” to implementing Program X and “no” to implementing Program Y was 100.

272/ (\*\*\*) An estimate of an actual data value has an error of p percent if p = 244083.png, where e is the estimated value and a is the actual value. Emma's estimate for her total income last year had an error of less than 20 percent. Emma's estimate of her income from tutoring last year also had an error of less than 20 percent. Was Emma's actual income from tutoring last year at most 45 percent of her actual total income last year? 🡪 A

1/ Emma's estimated income last year from tutoring was 30 percent of her estimated total income last year.

2/ Emma's estimated total income last year was $40,000.

0.8EI < AI < 1.2EI and 0.8ET < AT < 1.2ET. 🡪 AT / AI ≤ 0.45?

Given that ET = 0.3EI, it follows from 0.8ET < AT < 1.2ET that 0.24EI < AT < 0.36EI. Then, since 0.8EI < AI < 1.2EI, it follows that 1/1.2ET < 1/AI < 1/0.8ET.

Multiplying the inequalities gives 0.24ET/1.2ET < AT/AI < 0.36ET/0.8ET or 0.2 < AT/AI < 0.45

273/ (\*\*) Was Store K's profit last month at least 10 percent greater than its profit the previous month? 🡪 C

1/ Store K's expenses last month were 5 percent greater than its expenses the previous month.

2/ Store K's revenues last month were 10 percent greater than its revenues the previous month.

**Plast = Rlast − Elast**

**= 1.1Rprevious – 1.05Eprevious ≥ 1.1Rprevious – 1.1Eprevious**

307/ (\*\*) What percent of the students at University X are enrolled in a science course but are not enrolled in a biology course? 🡪 C. **0.28 = 0.7x (x for Science)**

1/ 28 percent of the students at University X are enrolled in a biology course.

2/ 70 percent of the students at University X who are enrolled in a science course are enrolled in a biology course.

370/ (\*\*) Machines K, M, and N, each working alone at its constant rate, produce 1 widget in x, y, and 2 minutes, respectively. If Machines K, M, and N work simultaneously at their respective constant rates, does it take them less than 1 hour to produce a total of 50 widgets? 🡪 D

1/ x < 1.5

2/ y < 1.2

Given that x < 1.5, it follows that Machine K, which produces **60/x = widgets in 60 minutes**, produces more than **60/1.5 = 40 widgets in 1 hour** = 60 minutes 🡪 > **30 + 40 = 70** widgets will be produced in 1 hour.

Given that y < 1.2, it follows that Machine M, which produces **60/y = widgets in 60 minutes**, produces more than **60/1.2 = 50 widgets in 1 hour** = 60 minutes. 🡪 **> 30 + 50 = 80** widgets will be produced in 1 hour

**OG 2020: Quant Sai 13/64**

PS:

98/ Reduce L: 30 \* L 🡪 ¾ \* 30 \* 40 🡪 L = 30 🡪 2(30 + 40) = 120

Reduce : W: W \* 40 🡪 ¾ \* 30 \* 40 🡪 W = 22.5 🡪 2(22.5 + 40) = 125 🡪 diff = 5

288/ If r, s pos int, r + s even? 🡪 C

1. r even; 2) s even

289/ (\*) Tri PQR has angle x < y? 🡪 D

1. PQ = QR; 2) PR > QR

293/ **Is the sum of four particular integers even? 🡪 D**

**(1) Two of the integers are odd and two are even.**

**(2) The average (arithmetic mean) of the four integers is an integer.**

294/ B. x = 90 🡪 35x = 3.5 \* 30y 🡪 y

306/ (\*) A. s = 40: 180 = 40 + r + t 🡪 **r + t = 140**

x + r = t + y = 180 🡪 **(x + y) + (r + t) = 360** 🡪 x + y + 140 = 360 🡪 x + y = 220

312/ (\*\*\*) In any sequence of n nonzero numbers, a pair of consecutive terms with opposite signs represents a sign change. For example, the sequence –2, 3, –4, 5 has three sign changes. Does the sequence of nonzero numbers s1, s2, s3, . . . , sn have an even number of sign changes? 🡪 **C**

**(1) sk = (-1)k for all positive integers k from 1 to n.**

**(2) n is odd.**

316/ (\*\*) If a, b int, is **a5 < 4b ? 🡪 A. a3 = - 27 🡪 a5 < 0 but 4b always > 0**

321/ (\*\*\*) Is the point Q on the circle with center C ? 🡪 E

(1) R is a point on the circle and the distance from Q to R is equal to the distance from Q to C.

(2) S is a point on the circle and the distance from Q to S is equal to the distance from S to C.

322/ (\*) D. 1) A + 2B + C = 24. **But A = C** 🡪 2B + 2C = 24 🡪 B + C = 12

1. A + C = 18 and B = 3. But A = C

323/ (\*) equal numbers of size large small & color red green.

**2x / (2x + 2y) = 2/3 🡪 x = 2y 🡪 y/(x + y)** = 1/3

326/ (\*) 4th: a + b + (a + b) = 2a + 2b 🡪 5th : 4a + 4b 🡪 4a + 4b = 12? 🡪 D

1. Sum of 1st 3 terms: 2a + 2b = 6; 2) 4th: 2a + 2b = 6

329/ Each side of each 24 tri piece (same side/ shape) = 9 cm 🡪 A

330/ (\*\*) **S.EDA / S.EBC = ½ ay / ½ (x-a)y = a / (x – a)**

* B. AE = 2 & EB = 4

331/ A noncompressible ball in the shape of a sphere is to be passed through a square opening in a board. What is the perimeter of the opening? 🡪 C

(1) The radius of the ball is equal to 2 inches. (Chưa biết ball lọt square ko)

(2) The square opening is the smallest square opening through which the ball will fit. (Chưa biết ball)

353/ (\*\*) (x + b) / căn (x + a) defined for x = -2? **🡪 x + a > 0 🡪 x > -a 🡪 -2 > -a 🡪 a > 2**?

1. X = 5

370/ (\*\*) 3(2.00X) = 3(2 + X/1000) = 6 + 3X/1000 & 2(3.00Y) = 6 + 2Y/1000

* 3(2.00X) > 2(3.00Y) only if 3X > 2Y 🡪 A. 3X < 2Y

377/ A. **17 is a mode for L1 & 17 is a mode for L2 🡪 17 is mode for L**

**Quant Review 2020: Sai 6 / 147**

79/ Avg 2 rates : ½ (rA + rB) = ½ (2/n + 3/m) = (3n + 2m) / 2mn

Car C : (3n + 2m) / 2mn \* t = 5 🡪 **tC = 10mn / (3n + 2m)**

84/ (\*) **3s2 = 24** 🡪 s = 2 căn 2

**Max area : 3 vuông nằm ngang cạnh s** = 2 căn 2 🡪 longest side = 2 căn 2 \* 3 = 6 căn 2

85/ Height = 4 căn 3 (tam giác 30-60-90) 🡪 S = 12 \* 4 căn 3 = 48 căn 3

86/ (\*) Smaller of 2 conse odd ints is multiple of 5. Cant be sum? 🡪 C. 22

5n + (5n + 2) = 10n + 2 🡪 Sum = 22 = 10n + 2 🡪 n = 2 but 5n = 5\*2 not odd

88/ (\*\*) To maximise the surface area, count as red, **except the cube which is at the centre**, all the other cubes must have their red surface area exposed = **27 – 1 = 26**

Total number of cube surfaces exposed = 9 \* 6 = 54

🡪 the greatest fraction = 26/54 = 13/27

102/ **counting in the clockwise direction** (đã lộn chiều)

215/ (\*) A. x = y = z 🡪 **x = y = z = 1/6 \* 360** = 60

217/ (\*\*) Sum of degrees of all turns of a park?

1. Each interior angle < 180. 🡪 quadrilateral: a + b + c + d = 360

* Sum of turns: (180 – a) + (180 – b) + (180 – c) + (180 – d) = 720 – (a + b + c + d) = 720 – 360 = 360

220/ C. z = 13 & A = 5y/2 = ½ xy 🡪 x = 5